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The Concept of Ecosystem Services in Ukrainian Environmental Legislation

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Abstract

This article focuses on the Ukrainian experience of legal support for the concept of ecosystem services, which is recognized as one of the most promising and popular areas of science and practice. The article outlines the general principles of the concept of ecosystem services, including the history of its formation and development, its essence and significance, analyses the main international legal and European documents, which reflect this concept in one way or the other, and provides the current state and prospects for its implementation in Ukraine. Thorough review led to a conclusion about the insufficient level of development of the specified concept in Ukrainian environmental legislation. The article has suggested possible ways to overcome the gaps.

Keywords

Environmental policy and law; Environmental legislation; Ecosystem; Ecosystem approach; Ecosystem services

Introduction

At the end of the 20th century, in view of the growing needs of mankind for the Earth's limited natural resources and the significant burden on ecological balance, which is manifested in the loss of biodiversity and climate change, the concept of "ecosystem services" has evolved in the international environmental debate (Varukha, 2022). Ecosystem services are all the useful resources and of the benefits that humans can obtain from nature. These services are essential for meeting fundamental human needs for habitat and food, and, thus, directly affect our standard of living. Knowledge about ecosystem services is needed for people to understand the importance of conserving biodiversity and maintaining natural processes in the environment, while research on ecosystem services is necessary for making decisions that may affect natural ecosystems, as the

conservation of ecosystems, their components and biodiversity in general depend on maintaining economic opportunities and providing a living environment for people (Vasilyuk and Ilminska, 2020).

Ecosystem services are free, but some of these services can be monetized, i.e. valued in monetary terms. Experts estimate that the value of ecosystem services in the world is estimated at USD 125 to 140 trillion per year, which is more than 1.5 times the global GDP.[1] The total value of ecosystem services in Ukraine is estimated at UAH 77.8 billion (USD 18.9 billion) annually.[2] Today, the concept of ecosystem services is recognized as one of the most promising and popular areas of world science and practice and is comprehensively, thoroughly and consistently studied by many foreign scientists (Abson *et al.*, 2014; Birkhofer *et al.*, 2015; Bouwma *et al.*, 2018; Boyd and Banzhaf, 2007; Costanza *et al.*, 1997; Costanza, 2020; Daily, 1997; Daily and Matson, 2008; Daily *et al.*, 2009; De Groot, 1987; Deeksha and Shukla, 2022; De Groot, 1994; De Groot *et al.*, 2002; Engel and Schaefer, 2013; Fisher *et al.*, 2007; Gómez-Baggethun *et al.*, 2010; Jacobs, Dendoncker and Keun, 2014; O'Higgins, Lago and de Witt, 2020; Rieu-Clarke and Spray, 2017).

In the Ukrainian scientific literature, the concept of ecosystem services is relatively new and is developed primarily by specialists in the field of economics (Gavadzin and Melnychuk, 2020; Ilyina and Shpyliova, 2020; Mishenin and Degtyar, 2015; Shpyliova and Nosulich, 2016; Shtyk, 2022; Veklych, 2019) and environmental science (Anisimova and Anisimov, 2019; Didukh, 2018; Vasenko and Milanich, 2022), but there are almost no publications where the issue is covered by representatives of legal fields, in particular environmental and legal scientific thought. Moreover, in contrast to foreign experience, this issue is hardly reflected in national environmental legislation, which is undoubtedly a significant drawback that needs to be addressed.

In this context, the purpose of this article is to analyze the process of formation and development of the concept of ecosystem services at the international and European levels, and to study the current state and prospects of its implementation in Ukrainian environmental legislation.

General Principles of the Concept of Ecosystem Services and its International and European Legal Framework

The scientific literature expresses different views on the historical foundations of the ecosystem service concept. Some scientists associate the moment of its emergence with the human awareness of the fact that ecosystems are capable of providing certain useful services. According to Mooney and Ehrlich (1997), while explicit recognition of ecosystem services is a relatively new phenomenon, the notion that natural ecosystems help to support society probably traces back to the time when our ancestors were first

[1] OECD (2019). Biodiversity: Finance and the Economic and Business Case for Action. Report prepared for the G7 Environment Ministers' Meeting, 5-6 May 2019. Available online at: https://www.oecd.org/environment/resources/biodiversity/Executive-Summary-and-Synthesis-Biodiversity-Finance-and-the-Economic-and-Business-Case-for-Action.pdf [accessed 15 July 2024].

[2] Monetization of ecosystem services in Ukraine: utopia or underestimated opportunities to achieve sustainable development goals. Available online at: https://www.ukrinform.ua/rubric-presshall/3353161-monetizacia-poslug-ekosistem-v-ukraini-utopia-ci-nedoocineni-mozlivosti-dosagnenna-cilej-stalogo-rozvitku.html [accessed 15 July 2024].

able to have notions. For example, Plato understood that deforestation of Attica led to soil erosion and the drying of springs. At the same time, scientists continue, one might consider the origins of modern concern for ecosystem services to trace to George Perkins Marsh's publication "Man and Nature" in 1864 (Mooney and Ehrlich, 1997).

Other scientists, on the contrary, emphasize the novelty of the ecosystem service concept and focus their attention on its most modern history. For instance, Gomez-Baggethun *et al*. (2010) believe that the origins of the modern history of ecosystem services are to be found in the late 1970s. It starts with the utilitarian framing of beneficial ecosystem functions as services in order to increase public interest in biodiversity conservation, and then continues in the 1990s with the mainstreaming of ecosystem services in the literature, and with increased interest on methods to estimate their economic value. In barely three decades, a rapidly growing number of ecosystem functions have been characterized as services, valued in monetary terms and, to a lesser extent, incorporated into markets and payment mechanisms (Gómez-Baggethun *et al.*, 2010).

A significant contribution to the development of this concept was made by E.F. Schumacher (1973), who in his book "Small is Beautiful: A Study of Economics as if People Mattered" (1973) used the term "natural capital" to demonstrate the importance of preserving natural resources through the prism of economic expediency. He argued that one reason why humanity ignores the rapid rate of loss of natural resources is that we are estranged from reality and inclined to treat as valueless everything that we have not made ourselves. Now, we have indeed labored to make some of the capital, which today helps us to produce – a large fund of scientific, technological, and other knowledge; an elaborate physical infrastructure; innumerable types of sophisticated capital equipment, etc. – but all this is but a small part of the total capital we are using. Far larger is the capital provided by nature and not by man – and we do not even recognize it as such. This larger part is now being used up at an alarming rate. If we treated natural resources, and first of all the fossil fuels, as capital items, we should be concerned with conservation: we should do everything in our power to try and minimize their current rate of use. But we do the opposite: we are maximizing, instead of minimizing the current rates of else; and, far from being interested in studying the possibilities of alternative methods of production and patterns of living – so as to get off the collision course on which we are moving with ever-increasing speed (Schumacher, 1973).

According to experts, the term "ecosystem services" first appeared in the book "Extinction: the Causes and Consequences of the Disappearance of Species" by P.R. Ehrlich and A.H. Ehrlich (1981), where, reflecting on the question of why endangered species should be saved, the authors provide four prime arguments in favour of their conservation: compassion, aesthetics, economics, i.e. direct benefits, and indirect benefits. The scientists emphasise that the first three arguments are easy to understand even for those who do not find them convincing. The fourth argument is the most important of all, although it is rarely heard and even less understood, because it is related to indirect benefits to humanity and is that other species are living components of vital ecosystems that provide irreplaceable free services to humanity, the significant disruption of which will lead inevitably to a collapse of civilization. By deliberately or unknowingly forcing species to extinction, *Homo sapiens* is attacking itself, it is certainly endangering society and possibly even threatening our own species with

extermination (Ehrlich and Ehrlich, 1981). Although these scientists, as we can see, understood ecosystem services more narrowly than they are considered now, and used this term only in relation to endangered species, they already clearly established the dependence of human well-being on natural ecosystems and the services they provide.

Later, the concept of ecosystem services was widely recognised and supported by a number of scientific publications, including the article "Environmental Functions as a Unifying Concept for Ecology and Economics", which argues that environmental functions (i.e. natural goods are services) are at least as important to human welfare as man-made goods and services and should, therefore, be included in economic accounting procedures (De Groot, 1987), "The value of the world's ecosystem services and natural capital", which substantiates that the services of ecological systems and the natural capital stocks that produce them are critical to the functioning of the Earth's life-support system, directly and indirectly contribute to human welfare, and, therefore, represent part of the total economic value of the planet (Costanza *et al.*, 1997), the book "Nature's Services: Societal Dependence on Natural Ecosystems", which explores how the earth's natural ecosystems confer benefits on humanity, and makes a preliminary assessment of their value (Daily, 1997).

In general, scientific sources provide different but very similar definitions and lists of ecosystem services. Thus, according to G.C. Daily (1997), ecosystem services are "the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfill human life". These services include: purification of air and water, mitigation of floods and droughts, detoxification and decomposition of wastes, generation and renewal of soil and soil fertility, pollination of crops and natural vegetation, control of the vast majority of potential agricultural pests, maintenance of biodiversity, partial stabilization of climate, etc. (Daily, 1997). R. Costanza, for example, identifies 17 main categories of ecosystem services (climate and water regulation, nutrient cycling, waste treatment, pollination, biological control, food production, etc.), and considers them as "the benefits human populations derive, directly or indirectly, from ecosystem functions" (Costanza *et al.*, 1997). At the same time, J. Boyd and S. Banzhaf, aiming to substantiate the practical application of ecosystem services in the accounting of human well-being and using economic principles, introduce an alternative concept – "final ecosystem services", defining them as 'components of nature, directly enjoyed, consumed, or used to yield human well-being' (Boyd and Banzhaf, 2007).

Great importance for the development of the ecosystem services concept had the international programme Millennium Ecosystem Assessment (MEA), which was carried out in 2001-2005 with the aim of assessing the impact of changes in ecosystems on human well-being and developing a scientific basis for actions necessary for the conservation of ecosystems and their sustainable use. Experts from all over the world were involved in the work of this Programme, and the results of their research are presented in 5 specialized volumes and 6 synthesis reports.

For example, the Report "Ecosystems and Human Well-being: Synthesis" (Millennium Ecosystem Assessment, 2005) focuses on the links between ecosystems and human well-being, especially ecosystem services, and emphasizes that humans are completely dependent on the Earth's ecosystems and the services they provide. It is pointed out that

over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history, largely to meet rapidly growing demands for food, fresh water, timber, fiber, and fuel. This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth. The changes that have been made to ecosystems have contributed to substantial net gains in human well-being and economic development, but these gains have been achieved at growing costs in the form of the degradation of many ecosystem services, increased risks of nonlinear changes, and the exacerbation of poverty for some groups of people. These problems, unless addressed, will substantially diminish the benefits that future generations obtain from ecosystems. The challenge of reversing the degradation of ecosystems while meeting increasing demands for their services can be partially met, but these involve significant changes in policies, institutions, and practices.

The Report succinctly defines ecosystem services as "the benefits provided by ecosystems" and categorizes them into four groups:

1. *Provisioning services*. These are the products obtained from ecosystems, including: food (vast range of food products derived from plants, animals, and microbes), fiber (wood, jute, cotton, hemp, silk, and wool), fuel (wood, dung, and other biological materials serve as sources of energy), genetic resources (genes and genetic information used for animal and plant breeding and biotechnology), biochemicals, natural medicines, and pharmaceuticals, ornamental resources (animal and plant products, such as skins, shells, and flowers), fresh water;

2. *Regulating services*. These are the benefits obtained from the regulation of ecosystem processes, including: air quality regulation, climate regulation, water regulation, erosion regulation, water purification and waste treatment, disease regulation, pest regulation, pollination, natural hazard regulation;

3. *Cultural services*. These are the nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences, including: cultural diversity, spiritual and religious values, knowledge systems (traditional and formal), educational values, inspiration, aesthetic values, social relations, sense of place, cultural heritage values, recreation and ecotourism;

4. *Supporting services*. They are necessary for the production of all other ecosystem services, and differ from provisioning, regulating, and cultural services in that their impacts on people are often indirect or occur over a very long time, whereas changes in the other categories have relatively direct and short-term impacts on people. These services include: soil formation, photosynthesis, primary production, nutrient and water cycling.

The classification of ecosystem services proposed by the MEA is recognized worldwide and is used in sub-global assessments. At the same time, there are other international definitions and classifications of ecosystem services that are also of practical use.

For instance, the international initiative "The Economics of Ecosystems and Biodiversity" (TEEB, 2010), which aims to draw attention to the global economic

benefits of biodiversity, has developed a new classification of ecosystem services that is used in national studies of the initiative across Europe. According to this classification, ecosystem services, which are considered as a direct and indirect contribution to human well-being, are also divided into four groups (provisioning, regulating, habitat, cultural and amenity), covering 22 services. And in accordance with the "Common International Classification of Ecosystem Services" (CICES) 2013 of the European Environment Agency (EEA), which is based on the previous two and adapted for accounting, ecosystem services are interpreted as the contribution that ecosystems make to human well-being and are divided into three groups (provisioning, regulation and maintenance, and cultural) with a further multi-level structure.[3]

At the international level, the issue of conservation and restoration of natural ecosystems as the basis for the concept of ecosystem services can be traced in strategic environmental documents, including: Declaration of the United Nations Conference on the Human Environment of 1972 (Stockholm Declaration),[4] the World Conservation Strategy of 1980,[5] the World Charter for Nature of 1982,[6] Declaration on Environment and Development of 1992 (Rio Declaration),[7] etc.

For example, analyzing the Stockholm Declaration, we can see that some of its principles explicitly emphasize the need to conserve and restore natural ecosystems for the benefit of all mankind and to maintain the ecosystem functions of natural sites. Thus, Principle 2 states that "the natural resources of the Earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management", while Principle 3 states that "the capacity of the Earth to produce vital renewable resources must be maintained and, wherever practicable, restored or improved".

The World Conservation Strategy recognizes as one of its conservation goals the maintenance of essential ecological processes (those processes that are governed, supported or strongly moderated by ecosystems and are essential for food production, health and other aspects of human survival and sustainable development) and "life-support systems", for instance, watershed forests or coastal wetlands. The maintenance of such processes and systems is vital for all societies regardless of their stage of development.

In the context of the formation and development of the concept of ecosystem services, the World Charter for Nature deserves special attention, as its Preamble states that "mankind is a part of nature and life depends on the uninterrupted functioning of natural systems which ensure the supply of energy and nutrients", while "lasting benefits from nature depend upon the maintenance of essential ecological processes and life support systems" (Preamble).

[3] Haines-Young, R. and Potschin, M. (2013): Common International Classification of Ecosystem Services (CICES): Consultation on Version 4, August-December 2012. EEA Framework Contract No EEA/IEA/09/003
[4] Report of the United Nations Conference on the Human Environment (UN, New York 1973) A/CONF.48/14/Rev.1.
[5] World Conservation Strategy: Living Resource Conservation for Sustainable Development. IUCN–UNEP–WWF, 1980.
[6] World Charter for Nature (adopted and entered into force 28 October 1982) A/RES/37/7 (WCN).
[7] Rio Declaration on Environment and Development (1992) UN Doc. A/CONF.151/26 (Vol. I) 31 ILM 874 (Rio Declaration).

Whereas the Rio Declaration refers to the integrated and integrated nature of the Earth, our home, as well as states that the cooperation among States, key sectors of societies and people should be in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem (Preamble and Principle 7).

In addition to these strategic documents, the basis of the concept of ecosystem services can be traced in a number of multilateral international treaties, the leading among which is undoubtedly the Convention on Biological Diversity of 1992,[8] which established a legal definition of "ecosystem" (a dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit) (Article 2), and obliged to take appropriate actions to conserve and restore ecosystems (Article 8). It is within the framework of this Convention that a holistic strategy called the "ecosystem approach" was developed, which consists in the management of land, water and living resources that promotes conservation and sustainable use in an equitable way. And one of the priority targets of the ecosystem approach was recognized as the conservation of the structure and functions of ecosystems in order to maintain ecosystem services (Principle 5 of the ecosystem approach) (Section B of the Annex to Decision V/6 "Ecosystem approach" of the Fifth Meeting of the Conference of the Parties to the Convention, 2000).[9]

Later, the strategy of the ecosystem approach, and, accordingly, the concept of ecosystem services, was reflected in many decisions of the Convention meetings (VI/12, VII/11, IX/7, XI/16, XII/19, XIII/5, XV/4 etc.) and in various international environmental legal acts.

Thus, at the 15th Conference of the Parties to the Convention on Biological Diversity the Kunming-Montreal Global Biodiversity Framework was adopted,[10] which notes that nature embodies different concepts for different people, including biodiversity, ecosystems, Mother Earth, and systems of life. Nature's contributions to people also embody different concepts, such as ecosystem goods and services and nature's gifts. Both nature and nature's contributions to people are vital for human existence and good quality of life, including human well-being, living in harmony with nature, and living well in balance and harmony with Mother Earth. The vision of the Kunming-Montreal Global Biodiversity Framework is a world of living in harmony with nature where "by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people."

As for the European legal framework of the concept of ecosystem services, it should be noted that since the European Union and its member states are parties to the Convention on Biological Diversity, all elements and principles of the ecosystem approach, including the fifth principle on ecosystem services, are reflected to some extent in the provisions of the relevant legislation. Thus, the "EU Biodiversity Strategy 2030:

[8] Convention on Biological Diversity (adopted 5 June 1992, entered into force 29 December 1993) 1760 UNTS 69 (CBD).
[9] Decisions adopted by the Conference of the Parties to the Convention on Biological Diversity at its Fifth Meeting (Nairobi, 15–26 May 2000). Decision V/6: Ecosystem Approach, UNEP/CBD/COP/5/23.
[10] Decisions adopted by the Conference of the Parties to the Convention on Biological Diversity at its Fifteen Meeting – Part II (Montreal, Canada, 7–19 December 2022). Decision XV/4: Kunming-Montreal Global Biodiversity Framework, CBD/COP/DEC/15/4.

Bringing Nature Back to Our Lives",[11] which aims to restore degraded ecosystems, notes that the economic case for biodiversity is compelling, as more than half of global GDP depends on nature and the services it provides. Industries and companies rely on genes, species and ecosystem services as essential resources for production, and therefore biodiversity loss and ecosystem destruction are among the greatest threats facing humanity in the next decade.

The Strategy emphasizes that the EU is ready to demonstrate its ambition to halt biodiversity loss, lead the world by example and action, and help agree and adopt a transformative global framework for the post-2020 period at the 15th Conference of the Parties to the Convention on Biological Diversity. This should be based on the ambitious goal of ensuring that by 2050, all of the world's ecosystems are restored, resilient and adequately protected. The world must adhere to the net gain principle to give back to nature more than it takes.

Based on this Strategy and other legal documents, on 17 June, 2024 the Nature Restoration Law was officially adopted. This Law particularly emphasizes the importance of ecosystem services for all humanity and sets a target for the EU to restore at least 20% of its land and marine areas by 2030, and commits to restoring all ecosystems in need by 2050. Definitely, restoring the natural ecological balance of forests, rivers, wetlands, grasslands, seas, and oceans will not only help to increase biodiversity and safeguard ecosystem services – of fundamental importance for the health of humankind and the prosperity of the global economy – but will also play a key role in climate change mitigation and adaptation, helping to limit the increase in temperatures to within the IPCC's 1.5°C threshold. This will also strengthen Europe's resilience to natural disasters, with significant benefits for health, food security and sustainable socio-economic development of Member States.[12]

The Ukrainian Experience of Legal Support for the Concept of Ecosystem Services

Returning to Ukrainian realities, we note that the ecosystem service concept is currently being actively developed in numerous works by economists and ecologists who study the theoretical and methodological foundations of the economics of ecosystem services, the problems of assessing their value, the formation and development of the ecosystem services market, etc. Despite this, the concept is hardly reflected in the national environmental legal doctrine and environmental legislation.

In particular, the main environmental Law of Ukraine "On Environmental Protection" of 25.06.1991,[13] which defines the legal, economic and social basis for the organization of environmental protection in the interests of present and future generations (Preamble), not only lacks any reference to the "ecosystem approach" or "ecosystem services", but

[11] EU Biodiversity Strategy for 2030: Bringing Nature Back into Our Lives. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions (Brussels, 20.05.2020, COM (2020) 380 final). Available online at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52020DC0380 [accessed 15 July 2024].

[12] The European Parliament adopts the Nature Restoration Law. Available online at https://www.etifor.com/en/updates/nature-restoration-law/ [accessed 15 July 2024].

[13] https://zakon.rada.gov.ua/laws/main/1264-12#Text

also never mentions the word "ecosystem", at least among the objects of legal protection, which, according to its Part. 1 of Article 5 are the environment as an aggregate of natural and natural-social conditions and processes, natural resources that are both involved in the economic cycle and not involved in the national economy at a given period (land, mineral resources, water, atmospheric air, forests and other vegetation, animal world), landscapes and other natural complexes.[14]

A similar situation is observed in other environmental regulations, primarily resource-related ones, some of which, although using the term "ecosystem", do not directly mention ecosystem services. For example, the Forest Code of Ukraine uses the term "ecosystem" in the definition of "forest", "natural forests", "virgin forests" and "quasi-virgin forests" (Article 1), as well as in the scope and methods of forest restoration and afforestation (Article 82) and measures to preserve biodiversity in forests (Article 85).[15] The Water Code of Ukraine defines the term "ecosystem" only in Article 108, which establishes urgent measures to prevent natural disasters caused by harmful effects of water, accidents on water bodies and liquidation of their consequences,[16] while the term "ecosystem" remains unknown in the Land Code of Ukraine,[17] the Code of Ukraine on Subsoil,[18] the Laws of Ukraine "On Flora",[19] "On Fauna",[20] etc.

It is quite obvious that it seems inconsistent and incorrect to talk about introducing the concept of ecosystem services into environmental legislation, with the ecosystem as its central category, while the key legal acts hardly use this term. Therefore, first of all, there is a need for a thorough analysis of these acts through the prism of the ecosystem approach, which, incidentally, has already been addressed at the highest level. Thus, in accordance with the Recommendations of the parliamentary hearings on "Priorities of the Environmental Policy of the Verkhovna Rada of Ukraine for the Next Five Years", approved by Resolution No. 457-IX of 14.01.2020, the then Ministry of Energy and Environmental Protection of Ukraine was recommended, together with the relevant central executive authorities, to consider streamlining the environmental legislation of Ukraine by systematizing it for each of the natural resources with an ecosystem approach (clause 1, part 2).[21] This was certainly a reasonable recommendation, which, unfortunately, was never implemented and remained only on paper.

The situation is somewhat better with strategic environmental documents, which not only consistently use the term "ecosystem", but also emphasize the importance of

[14] For the sake of fairness, we note that based on the recently introduced changes, the Law of Ukraine "On Environmental Protection" will later still mention the "ecosystem", but not in the context of the ecosystem approach or ecosystem services, and not in the list of objects of legal protection, but only within the framework of outlining the main components of management information support in the field of environmental protection (Article 25²), definition of biological diversity and a list of measures to preserve biological and landscape diversity (Article 64¹). See: "On amendments to some legislative acts of Ukraine regarding the state system of environmental monitoring, information on the state of the environment (ecological information) and information support for management in the field of the environment": Law of Ukraine, March 20, 2023 No. 2973-IX. https://zakon.rada.gov.ua/laws/show/2973-20#Text

[15] https://zakon.rada.gov.ua/laws/main/3852-12#Text

[16] https://zakon.rada.gov.ua/laws/main/213/95-вр#Text

[17] https://zakon.rada.gov.ua/laws/show/2768-14#Text

[18] https://zakon.rada.gov.ua/laws/main/132/94-вр#Text

[19] https://zakon.rada.gov.ua/laws/main/591-14#Text

[20] https://zakon.rada.gov.ua/laws/show/2894-14#Text

[21] https://zakon.rada.gov.ua/laws/show/457-20#Text

implementing the ecosystem approach and the concept of ecosystem services. By the way, some progress in this regard occurred with the adoption of the "Basic Principles (Strategy) of the State Environmental Policy of Ukraine for the Period up to 2020" approved by the Law of Ukraine of 21.12.2010,[22] which, among other things, proclaimed the following tasks in order to stabilize and improve the state of the environment: conducting an awareness-raising campaign on the value of ecosystem services on the example of Ukrainian ecosystems by 2015 and forming and further applying the valuation of ecosystem services by 2015, as well as implementing it by 2020. Responsible entities, deadlines and sources of funding for such measures as the valuation of ecosystem services provided by forest resources, as well as the development of methods for assessing and classifying types of ecosystem services were envisaged in the National Environmental Action Plan for 2011-2015[23] (measures No. 92 and 209, respectively). However, these measures were never implemented, and the Report on the Status of the Plan's Implementation simply ignored the first of these measures, while there is no information on the second measure at all (measure No. 206 is immediately followed by measure No. 210). As for the Action Plan for 2016-2020, it was prepared, discussed, but ultimately not adopted.

The next stage in the actualization of the development of the concept of ecosystem services was the adoption of the Law of Ukraine "On the Basic Principles (Strategy) of the State Environmental Policy of Ukraine for the Period up to 2030" of 28.02.2019,[24] which replaced the previous "Basic Principles" of 2010. Although this document embodies the ecosystem paradigm more thoroughly, since the implementation of the ecosystem approach is recognized as a condition for achieving the goal of the state environmental policy (according to Section II, the goal of such a policy is to achieve a good state of the environment by introducing an ecosystem approach to all areas of socio-economic development of Ukraine in order to ensure the constitutional right of every citizen of Ukraine to a clean and safe environment, to implement balanced nature management and to preserve and restore natural ecosystems), but it no longer sets any specific deadlines and tasks for the development and implementation of the concept of ecosystem services. It is limited to general statements that the development of ecosystem services will create opportunities for sustainable development of society and the ecosystem, and that Ukraine's biodiversity, which provides ecosystem services, should be conserved, assessed and restored accordingly by 2030 (Section VI Expected Results). The National Action Plan for Environmental Protection for the period up to 2025[25] provides for the introduction of modern methods of systematic informing of all segments of the population, especially territorial communities, about the value of the territories and objects of the nature reserve fund and the ecosystem services they provide (measure no. 64), and ensuring the integration of issues related to the conservation of biodiversity, biodiversity values and ecosystem services into national and local development strategies, planning processes and national accounting and reporting systems (Measure 143). In the Reports on the implementation of the Plan for 2021-2022 and 2023 provide general information and indicate that these measures are currently being implemented.

[22] https://zakon.rada.gov.ua/laws/show/2818-17#Text
[23] https://zakon.rada.gov.ua/laws/show/577-2011-p#Text
[24] https://zakon.rada.gov.ua/laws/show/2697-19#Text
[25] https://zakon.rada.gov.ua/laws/show/443-2021-p#Text

The importance of developing the concept of ecosystem services is also mentioned in other strategic planning acts, including: The State Strategy for Regional Development for 2021-2027, approved on 05.08.2020,[26] which outlines the problem of citizens' lack of ecosystem services (clean water, air, quality recreation) and emphasizes the need to promote public awareness of ecosystem services; the Strategy for Environmental Security and Climate Change Adaptation for the period up to 2030, approved on 20.10.2021,[27] according to which the state of ecosystem services is one of the worst indicators in Ukraine's assessment according to the Environmental Performance Index, which, of course, needs to be corrected and improved; and the State Strategy for Forest Management of Ukraine until 2035 of 29.12.2021,[28] which, in particular, emphasizes the need to monetize forestry ecosystem services and increase their share by developing and approving scientific and methodological frameworks for assessing ecosystem services provided by forests.

It is also worth noting that Ukraine has already begun the process of developing a scientific and methodological framework for the assessment of ecosystem services. In 2019, researchers at the National Forestry University of Ukraine conducted a research study and published a report analyzing the methodological framework and international experience in assessing ecosystem services in the context of international environmental treaties. The report provides relevant recommendations in this area, including the need to immediately establish an appropriate legal framework for the functioning of the national system of monitoring and assessment of ecosystem services and biodiversity, as well as to take into account their value when making economic decisions, especially those that affect biodiversity, as the lack of such regulation poses a threat to environmental safety and human well-being and is an obstacle to sustainable development.[29]

In addition, the issue of ecosystem service valuation was actively discussed at various scientific and practical events. For example, on 23.11.2021, the Forest Stewardship Council held a round table "Monetization of ecosystem services in Ukraine: utopia or underestimated opportunities to achieve sustainable development goals", where leading scientists and experts, representatives of state authorities, local governments and businesses discussed the monetization of ecosystem services, their implementation in the system of instruments of state environmental and forest policy and prospects for the development of the private market for ecosystem services in the context of achieving sustainable development goals.[30] According to E. Arustamyan, Director of the Department of Nature Reserve Fund and Land Resources, who was present at the event, monetization is needed primarily when making management decisions for natural ecosystems. The valuation of ecosystem services provides a broad understanding of the benefits we receive and the costs associated with their use. It is also needed to assess the extent of the losses

[26] https://zakon.rada.gov.ua/laws/show/695-2020-п#Text
[27] https://zakon.rada.gov.ua/laws/show/1363-2021-p#Text
[28] https://zakon.rada.gov.ua/laws/show/1777-2021-p#Text
[29] Development of scientific and methodological framework for the assessment of ecosystem services, taking into account the need to implement the decisions of international environmental treaties. Report on scientific and technical products under the contract No. 74/19. (August, 2019). Available online at https://mepr.gov.ua/wp-content/uploads/2023/05/Prezentatsiya-zvitu-Poslugy-ekosystem-04-12-2019-V1-1.pdf [accessed 15 July 2024].
[30] Monetization of ecosystem services in Ukraine: utopia or underestimated opportunities to achieve sustainable development goals. (2021). *Ukrinform.* Available online at https://www.ukrinform.ua/rubric-presshall/3353161-monetizacia-poslug-ekosistem-v-ukraini-utopia-ci-nedoocineni-mozlivosti-dosagnenna-cilej-stalogo-rozvitku.html [accessed 15 July 2024].

we are incurring by destroying ecosystems. Investing in the conservation and restoration of ecosystems is not only economically viable, but also vital.[31]

An equally large-scale event in this area was organized by the Ministry of Environmental Protection and Natural Resources of Ukraine on 11.02.2022, a roundtable discussion "Ways to develop state policy on the conservation and assessment of ecosystem services in Ukraine", which presented a draft concept of state policy in this area and discussed a number of issues related to the monetization of ecosystem services, their inventory at the regional and local levels, ways to address issues related to their inclusion in programs and plans, projects of economic activity and development of norms. During the roundtable, Deputy Minister R. Shakhmatenko noted that it is necessary to start working on the development of regulatory documents, collect proposals from all stakeholders in the near future and take them into account in the process of developing the state policy concept and draft law, as well as organize consultations in working groups, if necessary.[32]

At the roundtable meeting, the document "Conceptual Framework for State Policy and Legislation on Ecosystem Services" was presented,[33] which outlines the main challenges in this area, including ignoring in economic and state planning the environmental functions that the environment performs for people; failure to take into account the loss of natural objects, the costs of their restoration and their importance for well-being in the calculation of environmental damage; unclear fair "economic" price of the loss of natural areas (ecosystems); lack of tools and qualified information to assess impacts on natural ecosystems and their functions; lack of a regulatory framework to address these issues. The main emerging needs have been identified as, in particular, the following: a policy for taking ecosystem services into account in planning, management and decision-making; legislation on ecosystem services and their preservation, inclusion (expansion) of relevant norms in sectoral legislation (forests, eco-networks, land legislation, etc.); inclusion in the programs (regional development, sectoral budget support) of a plan of measures for the assessment of ecosystem services, risk management for them, dissemination of information; coordination of policies and actions in this area with relevant institutions and projects of the European Union.

This document also emphasizes that monetizing ecosystem services is a very difficult task, but ecosystem services and natural capital make a much greater contribution to human well-being than the circulation of goods and services on the market. The ways to solve problems in this area are: 1) integration of ecosystem services norms and policies into sectoral policies (agriculture, forestry, water and marine policy, etc.); 2) implementation of policy at the regional level; 3) new legislation (Law) on the conservation of ecosystem services; 4) prioritization of ecosystem services at the regional level and adaptive management of ecosystems that provide such services; 5) assessment of the state of ecosystems and their services, benefits from ecosystem

[31] Monetization of ecosystem services in Ukraine is a tool for achieving sustainable development goals. Available online at https://mepr.gov.ua/monetyzatsiya-poslug-ekosystem-v-ukrayi/ [accessed 15 July 2024].

[32] The Ministry of Ecology calls on experts to submit their proposals for the formation of state policy in the field of ecosystem services conservation. (2022). Available online at https://old.loda.gov.ua/news?id=65486 [accessed 15 July 2024].

[33] Conceptual framework of state policy and legislation on ecosystem services. Ministry of Environmental Protection and Natural Resources of Ukraine. (2022). Available online at https://mepr.gov.ua/wp-content/uploads/2022/10/Ekosystemni-poslugy_Kruglyj-stil-11lyutogo_Prezentatsiya-proektu-kontseptsiyi.pdf [accessed 15 July 2024].

services and risks to them, development of tools for the assessment of ecosystem services, including monetary ones; 6) development of economic instruments and financing mechanisms for the assessment and conservation of ecosystem services (polluter pays principle, payment for ecosystem services, etc.); 7) inclusion of ecosystem services in state statistics and accounting by analogy with the EU SEEA Ecosystem Accounting; 8) education and dissemination of information.

This document also proposed the content of the draft Law on the Conservation of Ecosystem Services, which includes the following components:

- main categories of ecosystem services; assessment criteria; classes of significance, for example: critical ecosystem services for disaster protection, important for daily functioning, etc.;
- the procedure for assessing ecosystem services, developing ecosystem service management plans at the regional level, and mechanisms for financing measures for the conservation and restoration of ecosystem services;
- those responsible for assessment and plans at the regional level: local state administrations, with the involvement of local governments, permanent land and water users;
- provision for taking into account the results (assessments and plans) in urban planning documentation, environmental impact assessment, strategic environmental assessment, and decision-making on activities;
- funding mechanism for building technical capacity (knowledge, tools) in the field of ecosystem services assessment and conservation;
- provisions that should be included in sectoral legislation for the purpose of assessing and conserving ecosystem services.

Thus, by early February 2022, the issue of ecosystem services had gained appropriate publicity, as a draft concept of state policy on the conservation and assessment of ecosystem services had already been developed and promising areas for its implementation had been identified, including through the adoption of the necessary legislation. However, these plans could not be implemented as quickly as planned, as a full-scale invasion of Ukraine by Russian troops began just a few weeks later, on February 24, 2022. On the same day, martial law was introduced, and the Ukrainian people found themselves in new realities, experiencing the most difficult times in their modern history.

From the very beginning of Russia's full-scale invasion, irreparable damage has been done to Ukraine's environment. According to the head of the Ministry of Environmental Protection and Natural Resources of Ukraine, R. Strelets, almost 4 thousand crimes against the environment have been documented over the two years of armed aggression. crimes against the environment, while the estimated losses already exceed UAH 2.2 trillion (USD 53 billion), including UAH 1.024 billion (USD 24.7 million) in losses from land contamination and soil pollution, UAH 1.081 billion (USD 26.2 million) in damage from air pollution, including the burning of oil products, forest fires, and the ignition of other objects, as well as UAH 82.2 billion (USD 2 billion) in losses from pollution and contamination of water resources and sea waters.[34]

[34] The damage to Ukraine's environment from the war exceeded UAH 2.2 trillion. Available online at https://shorturl.at/9hxM7 [accessed 15 July 2024].

To calculate the damage caused, including environmental damage, the year before last, on 20 March 2022, the Resolution of the Cabinet of Ministers of Ukraine No. 326 "On approval of the Procedure for determining the damage and losses caused to Ukraine as a result of the armed aggression of the Russian Federation"[35] was approved, which provided for the adoption of special methods for calculating damage and losses caused to the environment, and which have been adopted over time (these are methods for determining the amount of damage caused to land and soil,[36] atmospheric air,[37] water,[38] natural resources within the territorial sea, exclusive (maritime) economic zone and inland waters,[39] subsoil,[40] forestry,[41] territories and objects of the nature reserve fund[42]). According to Deputy Minister O. Kramarenko, these methodologies take into account the ecosystem approach, i.e., they allow for an objective accounting of the loss of not only ecosystems but also ecosystem services,[43] or, as she emphasized a little later, at least the latest methodology for the nature reserve fund partially applies the principle of loss of ecosystem services.[44]

In fairness, it should be noted that, indeed, the "Methodology for Determining Damage and Losses Caused to the Territories and Objects of the Nature Reserve Fund as a Result of the Armed Aggression of the Russian Federation" approved by Order of the Ministry of Ecology No. 424 of 13 October 2022 among the objects of assessment are natural complexes, which include ecosystems (clause 2, section II), while the calculation of damage caused to the territories and objects of the nature reserve fund as a result of the armed aggression of the russian federation should be based on determining the amount of compensation for the restoration of the original state of the ecosystems of the protected area (clause 4, section III). At the same time, the statement that this Methodology already takes into account the ecosystem approach and applies the principle of loss of ecosystem services seems rather dubious, given the absence in Ukrainian environmental legislation of not only real mechanisms for the valuation of ecosystem services, but also their legal definition.

Therefore, there is reason to agree with the representatives of the international charitable organization "Environment-People-Law", who held a webinar "Ecosystem Services and Environmental Damage Assessment as a Result of Russian Aggression" on January 31, 2023, and in the announcement indicated that the methods approved last year allow only partial assessment of the amount of environmental damage caused mainly through the monetary assessment of lost natural resources and the expected costs of their restoration. However, this completely ignores the losses from the loss of ecosystem services due to the destruction of ecosystems over an area of hundreds of thousands of hectares. The

[35] https://zakon.rada.gov.ua/laws/show/326-2022-п#Text
[36] https://zakon.rada.gov.ua/laws/show/z0406-22#Text
[37] https://zakon.rada.gov.ua/laws/show/z0433-22#Text
[38] https://zakon.rada.gov.ua/laws/show/z0900-22#Text
[39] https://zakon.rada.gov.ua/laws/show/z1253-22#Text
[40] https://zakon.rada.gov.ua/laws/show/z1337-22#Text
[41] https://zakon.rada.gov.ua/laws/show/z1308-22#Text
[42] https://zakon.rada.gov.ua/laws/show/z1416-22#Text
[43] Ministry of Environment: The scale of damage caused to Ukraine's environment by Russian aggression is shocking to the whole world. (2022). Available online at https://www.kmu.gov.ua/news/mindovkillya-masshtabi-shkodi-zavdanoyi-dovkillyu-ukrayini-vid-agresiyi-rf-vrazhayut-ves-svit [accessed 15 July 2024].
[44] Russian Aggression: How to Calculate Environmental Damage. (April, 2023). *Svit*. Available online at https://svit.kpi.ua/2023/04/17/російська-агресія-як-рахувати-збитки/ [accessed 15 July 2024].

reason is that Ukrainian legislation does not even define ecosystem services, let alone provide methods for their assessment.[45]

A similar opinion was expressed by R. Strelets, according to whom the number of calculated damages may increase significantly after certain changes to our legislation are made. For example, in the United States and European countries, there is a legal term called "ecosystem services." If it is enshrined in the Ukrainian legal framework, we will be able to more accurately calculate the damage from the destruction of, for example, one tree. After all, the time required to restore such a tree will be included in the damage assessment. It will take into account how much greenhouse gases this tree absorbs, how much it affects human life and the environment as a whole. Outlining the current state and prospects in this area, the Minister confirmed the creation of a working group under the Ministry of Ecology and the involvement of the necessary specialists to develop appropriate changes and introduce the concept of "ecosystem services" in Ukraine. There are already agreements on assistance with the U.S. Special Representative for Biodiversity and Water Resources, M. Medina, and productive meetings have been held on the sidelines of the UN Conference on Biodiversity and the UN Water Conference. To begin with, we will take the model of ecosystem services that works in other countries and analyze how it can be integrated into our legislation.[46]

By the way, the Minister also emphasized the need to introduce the concept of ecosystem services into national environmental legislation in his recent interview, noting that today environmental damage is recorded on the basis of 7 methods that were developed in 2022. But our ultimate goal is not just to calculate damage, but to include the cost of loss of ecosystem services. This is, for example, what a person could have gotten from nature if this nature had not been destroyed. This means a clean environment, life expectancy, and the quality of life of every person around the world. Since the environment has no borders, any impact on the environment here will definitely have an impact not only in other countries but also on other continents. Today, we calculate the area of contaminated land and the concentration of pollutants that have entered the river. In other words, we are following the model provided for by Ukrainian legislation. We have adapted these methods and identify the types of consequences that were caused by the hostilities. But we want to include the loss of ecosystem services in these methods. First of all, we will be more objective and civilized when making such calculations, and then the value of each square centimeter of land will increase tenfold.[47]

It should be noted that after a break, the discussion on the development of an appropriate regulatory framework for ecosystem services was continued and implemented in the Recovery Plan of Ukraine, which R. Strelets presented at the International Conference on the Recovery of Ukraine, held in Lugano (Switzerland) on July 4-5, 2022. In the environmental component of the Plan, in the section "Environmental Security", one of

[45] Announcement of the webinar "Ecosystem Services and Environmental Damage Assessment as a Result of Russian Aggression (2023). *Environment-People-Law Center*. Available online at http://epl.org.ua/announces/anons-vebinaru-ekosystemni-poslugy-ta-otsinka-shkody-dovkillyu-vnaslidok-rosijskoyi-agresiyi/ [accessed 15 July 2024].

[46] Strelets, Ruslan (2023). Environmental damage from the war already exceeds 1.9 trillion hryvnias. Available online at https://armyinform.com.ua/2023/04/15/shkoda-dovkillyu-vid-vijny-vzhe-perevyshhuye-19-tryljona-gryven-ruslan-strilecz/ [accessed 15 July 2024].

[47] Yakovleva, Y. (2024). The consequences of ecocide for Ukraine were discussed with the Minister of Ecology Strelets. Available online at https://podrobnosti.ua/2490911-nasldki-ekotsidu-ntervju-z-mnstrom.html [accessed 15 July 2024].

the directions assigns the Ministry of Environment to develop a draft law by 31. 12.2023, to develop a draft Law of Ukraine "On Ecosystem Services" that describes the content and importance of ecosystem services, legal and institutional mechanisms for their inventory and assessment, calculation of their economic value, requirements for consideration in decision-making, as well as for the use or impact on them by individuals and legal entities. The deadline for the Law's entry into force is 31 December 2025, and the obligation to develop draft bylaws within six months of its adoption that will determine the list of ecosystem services, methods for their inventory and assessment, and other mechanisms for implementing the provisions of the Law is also set.[48]

Despite such an ambitious goal, it is already July 2024, and unfortunately, no draft Law on Ecosystem Services and other related regulations have been adopted yet, although the need for their adoption is beyond doubt. Such a law should start working much earlier than planned, because it is clear that the priority task for a realistic assessment of the damage caused to Ukraine's environment, so that it is possible to "add the assessment of ecosystem services lost by all of us to the total amount of reparations that Russia will have to pay to Ukrainians in the future",[49] should be to develop the necessary methods for calculating ecosystem services and adopt the relevant legislation. This task must be accomplished.

At the same time, it should be emphasized once again that, in addition to developing a new legal framework for the legal regulation of ecosystem services, it is equally important to analyze and improve the current environmental legislation with an ecosystem approach, primarily the Law of Ukraine "On Environmental Protection", which, as noted, does not even recognize the ecosystem as an object of legal protection, as well as resource codes and laws that also do not take into account the ecosystem component. If this is not done now, then in the future there is a threat of inconsistent legal regulation mechanisms, which may have extremely negative consequences.

This thesis is confirmed, in particular, by the fact that in some places these acts already provide for certain constructs that can be considered as ecosystem services, but they are not perceived as such because they have a different wording.

Thus, in the national doctrine of environmental law and environmental legislation, the term "natural resources" is traditionally used to refer to environmental components used as sources of satisfaction of human and social needs, which, however, may actually coincide with ecosystem services, primarily provisioning services. For example, the Forest Code of Ukraine recognizes forest resources as timber, technical, medicinal and other forest products used to meet the needs of the population and production and reproduced in the process of forming forest natural complexes (Part 1 of Article 6).[50] Obviously, such forest resources are nothing more than provisioning ecosystem services provided by forests.

[48] Draft Recovery Plan for Ukraine. (July 2022). Materials of the Environmental Security Working Group. Available online at https://www.kmu.gov.ua/storage/app/sites/1/recoveryrada/ua/environmental-safety-assembly.pdf [accessed 15 July 2024].

[49] Ecosystem services and war: what do we lose when nature disappears? (2022). *NGO "Ukrainian Nature Conservation Community"*. Available online at https://uncg.org.ua/ekosystemni-posluhy-i-vijna-shcho-my-vtrachaiemo-koly-znykaie-pryroda/ [accessed 15 July 2024].

[50] https://zakon.rada.gov.ua/laws/main/3852-12#Text

The same is true for other natural resources, for example, plant resources, which, according to the Law of Ukraine "On Flora", are objects of the plant world (wild and other non-agricultural vascular plants, bryophytes, algae, lichens and fungi at all stages of development and natural communities formed by them) that are used or can be used by the population for production and other needs (Art. 3),[51] land resources, which are the aggregate natural resource of the land surface as a spatial basis for settlement and economic activity, the main means of production in agriculture and forestry (Art. 1 of the Law of Ukraine "On Land Protection"[52]), water resources – volumes of surface, ground and sea waters of the respective territory (Article 1 of the Water Code of Ukraine),[53] as well as wild animals, their parts (horns, skin, etc.) and products of their vital activity (honey, wax, etc.) (Article 3).[54]

Moreover, even in the Law of Ukraine "On Environmental Protection", in addition to natural resources that can be recognized as supporting ecosystem services, there is a veiled reference to other ecosystem services, as it states that natural resources are able to satisfy not only material but also aesthetic, health, recreational and other needs (Article 38),[55] which seems to correlate to some extent with the understanding of cultural ecosystem services.

Similarly, based on the analysis of the provisions of resource codes and laws, it can be seen that, for example, when it comes to forest ecosystem services, the Forest Code of Ukraine,[56] in addition to the 'ordinary' forest resources (timber, technical and medicinal raw materials), which are supporting ecosystem services the law also specifies the beneficial properties of forests (their ability to reduce the negative effects of natural phenomena, protect soils from erosion, prevent and cleanse the environment, contribute to the regulation of water flow, improve public health and aesthetic education, etc. 2 of Article 6, etc.), which, although called "forest resources", actually fall under the definition of regulating, cultural and supporting ecosystem services. The same can be said about natural plant resources that can be used for environmental, recreational, health, cultural, educational and upbringing purposes (Article 15 of the Law of Ukraine "On Flora"),[57] wild animals that, according to the Law of Ukraine "On Fauna", can be used as "natural environmental sanitation, pollinators of plants, etc.", as well as for scientific, cultural, educational, aesthetic and other purposes (Articles 16, 18, 20, 28, 29, etc.),[58] water, which is also used for health, recreational and sports purposes (Articles 64 et seq. of the Water Code of Ukraine),[59] and even subsoil, which is provided for use to create geological areas and objects of important scientific, cultural, sanitary and health significance (Article 14 et seq. of the Subsoil Code of Ukraine).[60] That is, again, here we are actually talking about regulatory, cultural and supporting ecosystem services provided by the relevant objects.

[51] https://zakon.rada.gov.ua/laws/main/591-14#Text
[52] https://zakon.rada.gov.ua/laws/main/962-15#Text
[53] https://zakon.rada.gov.ua/laws/main/213/95-вр#Text
[54] https://zakon.rada.gov.ua/laws/show/2894-14#Text
[55] https://zakon.rada.gov.ua/laws/main/1264-12#Text
[56] https://zakon.rada.gov.ua/laws/main/3852-12#Text
[57] https://zakon.rada.gov.ua/laws/main/591-14#Text
[58] https://zakon.rada.gov.ua/laws/show/2894-14#Text
[59] https://zakon.rada.gov.ua/laws/main/213/95-вр#Text
[60] https://zakon.rada.gov.ua/laws/main/132/94-вр#Text

Thus, we are convinced that the process of introducing the concept of ecosystem services into national environmental legislation, on the one hand, should not be delayed, because our nature suffers daily from the destructive actions of the aggressor and all the damage caused to it should be properly assessed and compensated in full, and, on the other hand, to be as cautious, systematic and prudent as possible, since it is likely that the concept of ecosystem services in the future may replace or at least significantly transform the view of legal regulation of the protection, use and restoration of natural resources in Ukraine, which is established in science and legislation. So, indeed, as R. Strelets rightly emphasized, we need not only to carefully study the model of ecosystem services that exists in other countries, but also to thoroughly analyze the ways in which it can be integrated into national environmental legislation.

Conclusion

Based on the study, it can be concluded that the concept of ecosystem services is recognized as an extremely promising and popular area of scientific research and requires further study and development. It is thoroughly represented at the international and European levels, but is not yet sufficiently developed at the level of Ukrainian environmental legislation.

Recently, the concept of ecosystem services has gained sufficient publicity in the media space of Ukraine, but no significant practical steps have been taken to implement it, although this issue is undoubtedly of particular relevance in the current situation and is essential for a realistic assessment and full compensation of the damage caused by the russian federation to the environment of our country as a result of armed aggression. The current situation can become a kind of “catalyst” for the implementation of this concept by expressing all natural benefits in monetary terms and realizing what we are actually losing.

One of the ways to introduce the concept of ecosystem services into Ukrainian environmental legislation is to develop the Law of Ukraine “On Ecosystem Services” and other bylaws in this area, which we hope will be adopted and come into force as soon as possible. However, it is clear that the implementation of this concept is not only about adopting a new regulatory framework. An equally important task is to review and improve the current environmental legislation, in particular the Law of Ukraine “On Environmental Protection”, as well as all resource-specific codes and laws through the prism of the ecosystem approach, since only under such conditions can legislative gaps and conflicts be avoided when adopting new laws and regulations and a coherent model for implementing the concept of ecosystem services in Ukraine be developed.

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Author's Declarations and Essential Ethical Compliances

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The author(s) solemnly declare(s) that this research has not involved any human subject (body or organs) for experimentation. It was not a clinical research. The contexts of human population/participation were only indirectly covered through literature review. Therefore, an Ethical Clearance (from a Committee or Authority) or ethical obligation of Helsinki Declaration does not apply in cases of this study or written work.

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